

**REMARKS**

Reconsideration of the application as amended is respectfully requested. The Examiner has restricted examination of claims 1-66 in this application. Specifically, the Examiner restricted claims 1-38 and 53-66 to Group I as being drawn to an apparatus and claims 39-52 to Group II as being drawn to a method.

Although the Applicants do not necessarily agree with the Examiner's reasons for restriction, on March 19, 2004, the Applicants provisionally elected to prosecute the claims of Group I. By this response, the Applicants affirm the election of the claims of Group I. Therefore, Applicants have canceled claims 39-52 without prejudice for possible inclusion in a divisional application.

Further, the Examiner objected to the disclosure and the drawings because of informalities, such as typographical errors. *See Paper Paper No. 20040622, pages 3-4.* Accordingly, Applicants have amended the Specification and Drawings to address the several informalities listed by the Examiner. The amendments are believed to overcome all of the Examiner's objections to the disclosure and the drawings.

Finally, Applicants note that claims 1-38 and 53-66 are pending in the present application. In the Office Action, the Examiner allowed claims 15-29, 31-38, and 53-65. Further, the Examiner indicated that claims 2 and 3 would be allowable if rewritten in independent form including all of the elements of the base claim. Applicants graciously

acknowledge the Examiner's indication of the allowable subject matter. In view of the foregoing amendments and following remarks, reconsideration and allowance of *all* pending claims is respectfully requested.

### **Rejections Under 35 U.S.C. § 102**

The Examiner rejected claims 1, 9, 13, 14, and 66 under 35 U.S.C. § 102 as being anticipated by Kendrick et al., U.S. Patent No. 4,740,550 (hereinafter "Kendrick). The Examiner also rejected claim 66 under 35 U.S.C. § 102 (three separate rejections) as being anticipated by Hottovy et al. (US 6,239,235 B1), Hottovy et al. (US Patent 5, 183,866), and Hanson (US 5,575,979). Claims 1 and 66 are independent. Applicants respectfully traverse these rejections.

### ***Legal Precedent***

Anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). In order to maintain a proper rejection under section 102, a single reference must teach each and every element or step of the rejected claim, else the reference falls under section 103. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Accordingly, the Applicants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter. The prior art reference also must show the *identical* invention "*in as complete detail as contained in the ...*

*claim*" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

### ***Independent Claim 1***

Independent claim 1 recites "wherein two of the impellers face each other." In sharp contrast, the two impellers (of motors 2A and 2B) disclosed in the Kendrick reference are *offset* and thus clearly do not face each other, as presently claimed. *See* Kendrick, Figure 1; col. 8, lines 39-45. Indeed, the Kendrick impellers are disposed in two different horizontal segments of the reactor, and thus *cannot* face each other. *See id.* Therefore, the Kendrick reference fails to disclose each element of independent claim 1, and accordingly, it cannot anticipate claim 1 and the claims dependent thereon.

Independent claim 1 also recites "wherein the two impellers . . . rotate in opposite directions." Quite the reverse, the Kendrick reference discloses that the direction of the impeller rotation of the axial-flow pumps 2A and 2B are the in *same* direction. It is plain from the directional arrows A, B, C, and D of Figure 1 that the Kendrick impellers *must* rotate in the same direction, and not in opposite directions, as claimed. *See*, Figure 1; col. 8, lines 39-45 (noting that the polymerization slurry is directionally circulated throughout the loop reactor 1 as illustrated by arrows A-D). Therefore, claim 1 and its dependent claims are believed allowable over the Kendrick reference for this reason as well.

Applicants would like to address the Examiner's assertion that "the recitation of the direction of rotation of the impellers is found to be an operational condition which is not given

weight in an apparatus claim.” *See* Paper No. 20040622, page 5 (citing M.P.E.P. § 2114).

Applicants respectfully, but strongly, traverse the Examiner’s assertion that this claim 1 recitation of the direction of rotation is only an operational condition.

First, as appreciated by those of ordinary skill in the art, the impeller blades are structurally different depending on the predetermined direction of rotation of the impeller. Thus, the recitation in claim 1 that the impellers rotate in opposite directions imparts structural characteristics to the claimed apparatus. As discussed, the Kendrick reference does not disclose this structural element of the impeller rotation direction.

Independent claim 1 also recites “the two impellers are spaced sufficiently close so that one of the impellers benefits from the rotational energy of the other of the impellers.” In sharp contrast, the Kendrick impellers of pumps 2A and 2B are about as far apart as possible within the Kendrick loop reactor 1 flow path. *See* Figure 1. The Examiner’s misguided assertion that the impellers are “close enough” because they “are in the continuous loops” demonstrates the Examiner’s misunderstanding of the present technique and the cited reference. Example of “sufficiently close” the two pumps arranged in a single horizontal segment, a single minor segment, or in adjacent loop reactor elbows, and so on. *See, e.g.*, Specification page 9, para. 35. It is clear that Kendrick impellers are not sufficiently close to benefit from the rotational energy of each other. Claim 1 and its dependent claims are believed allowable over the Kendrick reference for this reason as well.

### ***Independent Claim 66***

Independent claim 66 recites “at least one mixed flow pump.” A mixed flow pump provides for discharge flow in a radial direction relative to the pump shaft. *See, e.g.*, Specification, paragraphs 40 and 66. In sharp contrast, all of the references cited by the Examiner in rejecting claim 66 are absolutely devoid of disclosing a mixed flow pump or radial pump. Indeed, with Kendrick, for example, the opposite of a mixed flow or radial flow pump is disclosed. *See* Kendrick, col.8, lines 39-41 (noting that the slurry is circulated with pumps, such as *axial* flow pumps 2A and 2B). Therefore, the cited reference fails to disclose each element of independent claim 66, and accordingly, it cannot anticipate claim 66.

### ***Request Withdrawal of Rejections***

In conclusion, Applicant respectfully requests reconsideration and withdrawal of the present rejections of the claims under 35 U.S.C. § 102.

### **35 U.S.C. § 103(a) Rejections**

The Examiner rejected 10-12 under 35 U.S.C. § 103 as being unpatentable over Kendrick et al. The Examiner also rejected claims 4-7, 10-12, and 30 under 35 U.S.C. § 103 as being unpatentable over Kendrick as applied to claim 1, and further in view of Hottovy et al. (U.S. 6,239,235 B1). Finally, the Examiner rejected claim 8 under 35 U.S.C. § 103 as being unpatentable over Kendrick as applied to claim 1, and further in view of Hottovy et al. (U.S. 5,565,175). All claims rejected under 35 U.S.C. § 103 are dependent claims. The Applicant respectfully traverses these rejections.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984).

Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

In making the first rejection under 35 U.S.C. § 103(a), the Examiner acknowledges that the Kendrick reference does not disclose the volume of the loop reactor zone, but then asserts, erroneously, that a change in size of the reactor within the level of ordinary skill in the art. See Paper 200440622, page 8. To the contrary, the sizing of loop reactors is not a simple “change in size,” as implied by the Examiner, but instead is a sophisticated undertaking that impacts design, construction, operation, and feasibility. Indeed, major efforts and resources in the polyolefin

industry have been directed at attempting to design, construct, and operate larger loop reactors, for example. Unfortunately, for those in the business of manufacturing polyolefins, the specific sizes of loop reactors with reaction zones of differing volumes is not a simple “change in size . . . with no difference in performance” as stated by the Examiner. See Paper 200440622, page 7. Nevertheless, despite the Examiner’s misguided assertion, the Examiner, in rejecting claims 10-12, did not obviate the deficiencies of the Kedrick reference with respect to independent claim 1. As for the remaining rejections under 35 U.S.C. § 103(a), the Examiner relies on the two Hottovy references. However, the two Hottovy references do nothing to obviate the deficiencies of the Kenderick reference discussed above with regard to independent claim 1.

Therefore, in sum, all of the dependent claims are believed to be patentable for the subject matter they separately recite as well as by virtue of their dependency on their respective allowable base claims. Moreover, there is no suggestion or motivation to modify or combine the cited references in the manner asserted by the Examiner or in the manner recited in the claims. Accordingly, Applicant respectfully requests withdrawal of the Examiner’s rejections and allowance of the claims.

### **Conclusion**

In view of the remarks and amendments set forth above, Applicant respectfully requests allowance of claims 1-38 and 53-66. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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**AMENDMENTS TO THE DRAWINGS**

Please refer to the attached complete set of the figures, and in particular, to Figures 4, 5, and 6 which have been amended to address objections to the Drawings and Specification made by the Examiner. In accordance with 37 CFR § 1.84(c), Figures 4, 5, and 6 have each been labeled as "Replacement Sheet" in the page header.